

**SPAWAR**



**04**  
**INSTALLATIONS &  
LOGISTICS  
DIRECTORATE**

# **Documentation for C4I Applications**

*Unified Systems Manual - Documentation  
Management Infrastructure*

## **FLSIC Conference Brief**

**SPAWAR 04H-5**

***Director of Product Data***

**Dave Williamson**

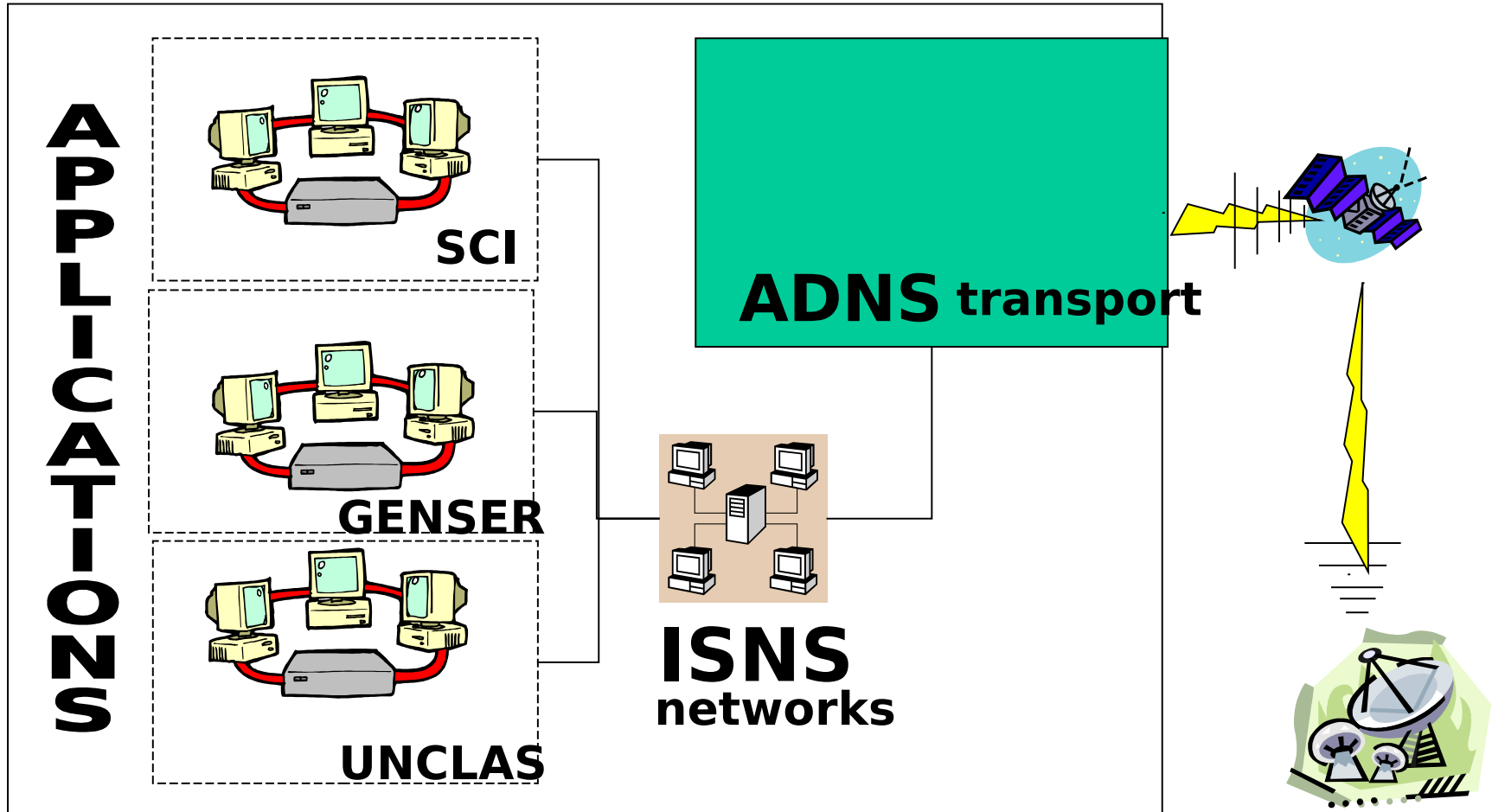
**david.williamson@**

**navy.mil**  
5/6 May 2003

# Requirements for C4I Application Documentation

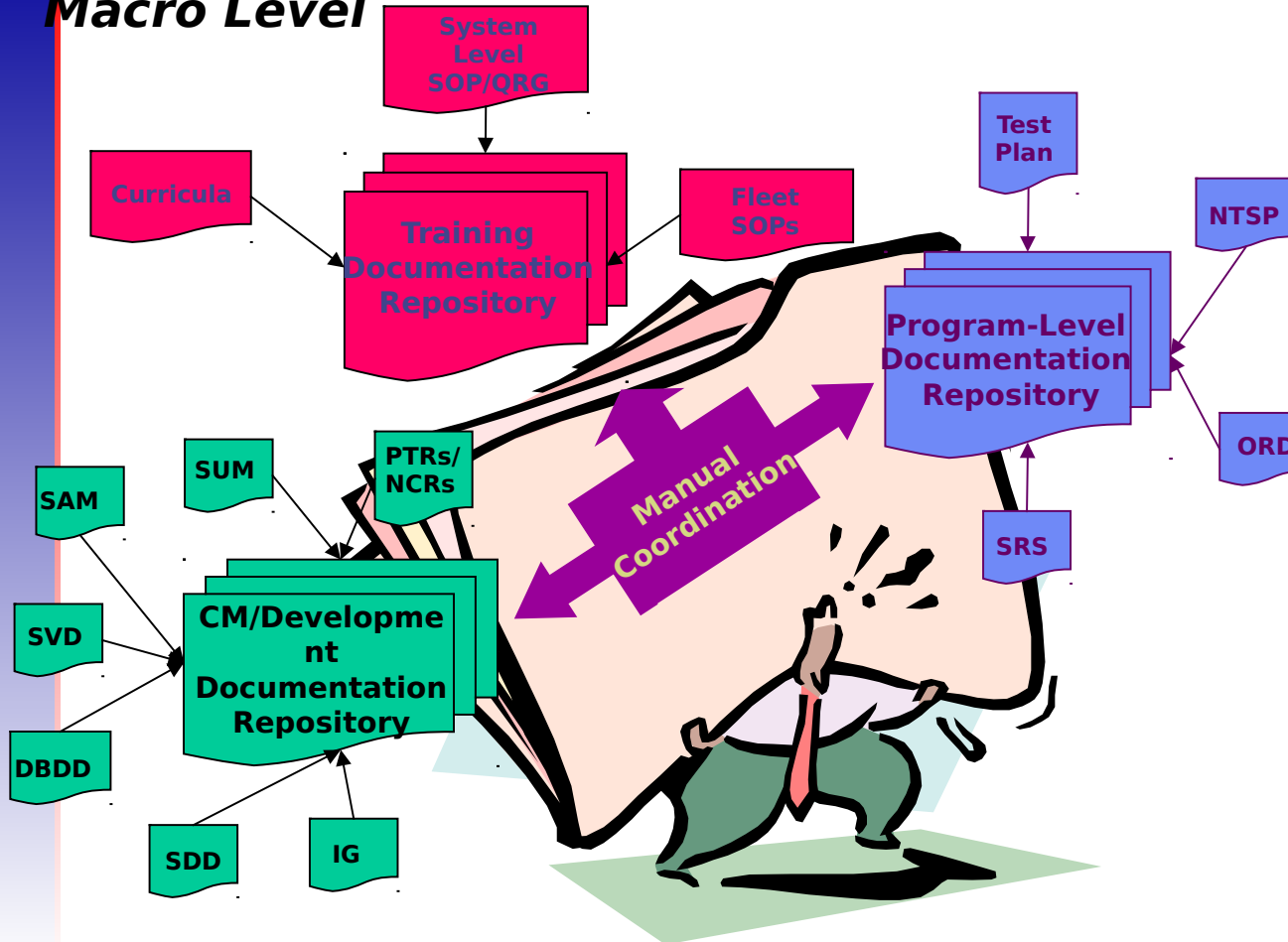
- SPAWAR / PEO C4I's technology refresh rate
  - 18 months
- System's operation, user, and administration documentation
  - Closely tied to software which is constantly changing
  - Verified through testing in conjunction with software
- Software components are shared (reused) among applications
  - So it makes sense that the documentation should be reusable as well
- SPAWAR / PEO C4I requires an on-line capability that
  - Allows for rapid technology refresh
  - Is delivered with software which is has been tested with an application
  - Supports reuse at a component level

# C4I Ship-Board Environment

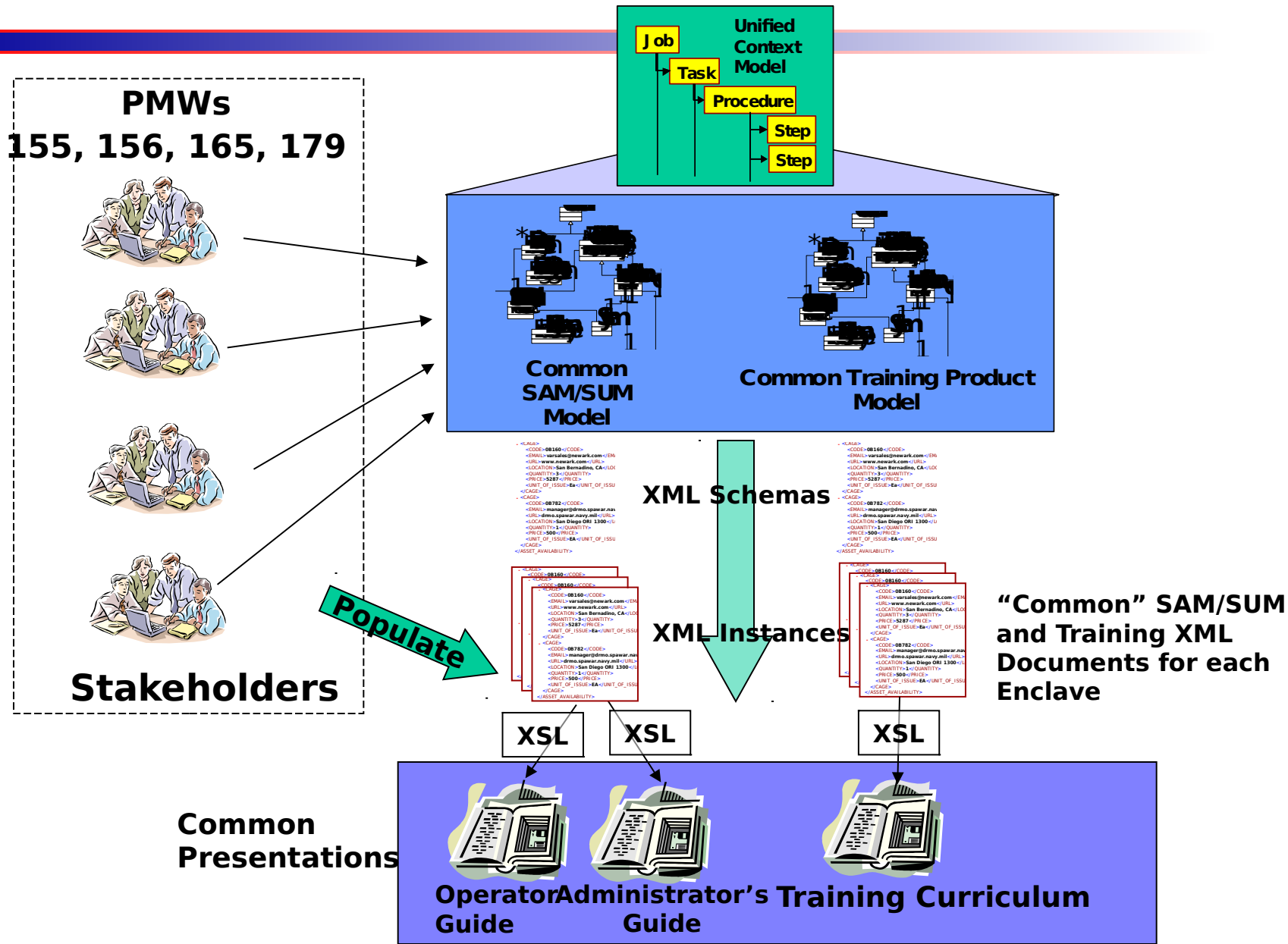


# Where we've been... (Today's Paradigm)

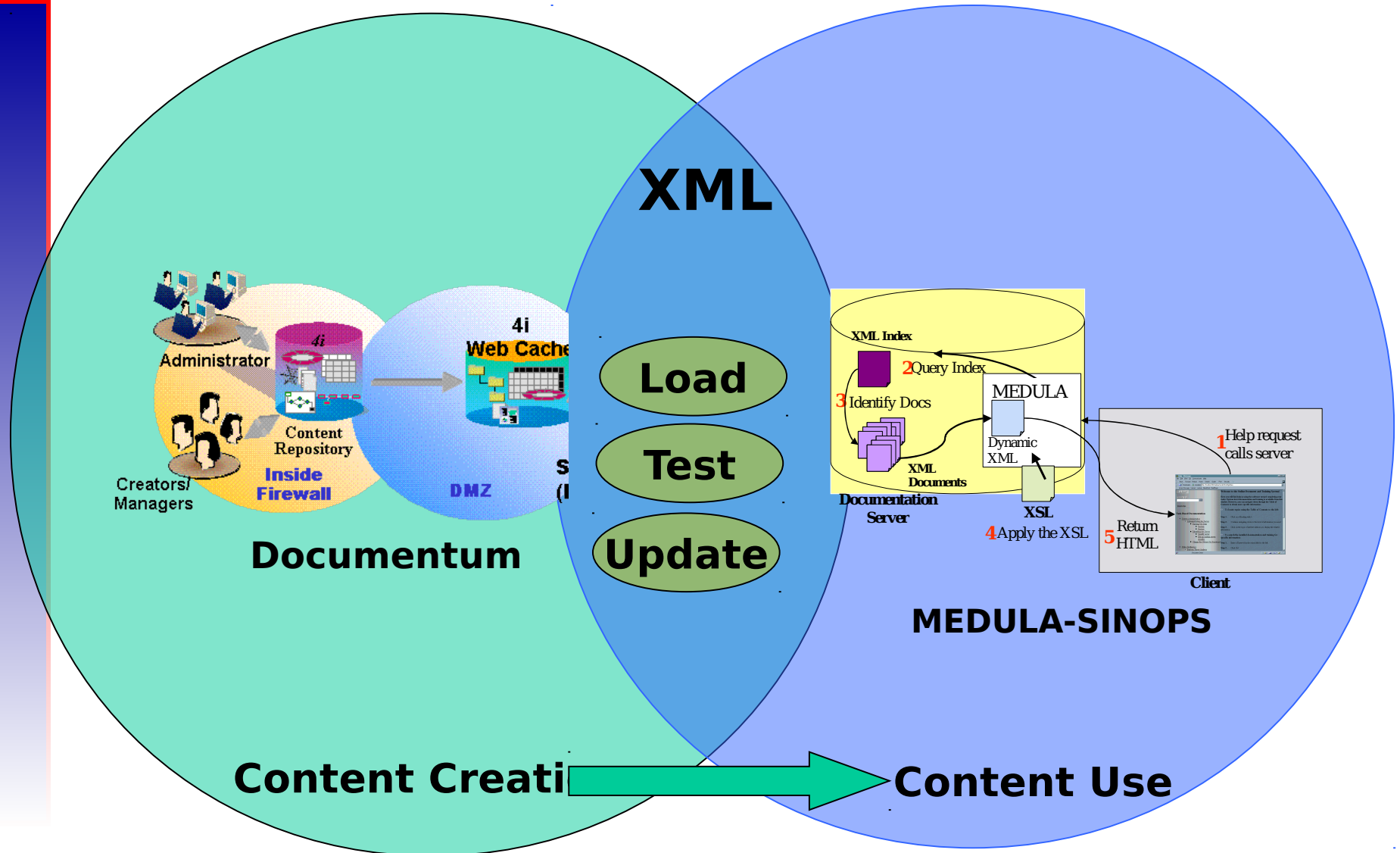
## Macro Level



- Processes and Products are Fragmented
  - Inconsistent formats = Duplication of effort
  - Products that don't interrelate = "stovepipe" documentation
  - Created at the last minute = Untested documentation
  - Updates handled inconsistently = poor/old product that doesn't match the system
  - Archaic Distribution Methods = Lack of Availability to the Warfighter



# The USM-DMI Approach



## 2 XML DTDs

- Component Product Documentation Data (CPDD)
  - Detailed info related to a COE software segment
  - Functions
    - Sub-functions
      - Procedures
        - » Steps
  - Provides the capability to author documentation compatible with the way the software is developed.
  - Embedded links may reference other elements in other CPDDs.
- System Level Document Data (SLDD)
  - System level information which may reference multiple CPDDs for segments a system uses
  - Job
    - Duty
      - Task
        - » Subtask...
  - Ties together segment level documentation with the JTA
  - Embedded link may reference elements from CPDDs and SLDDs.

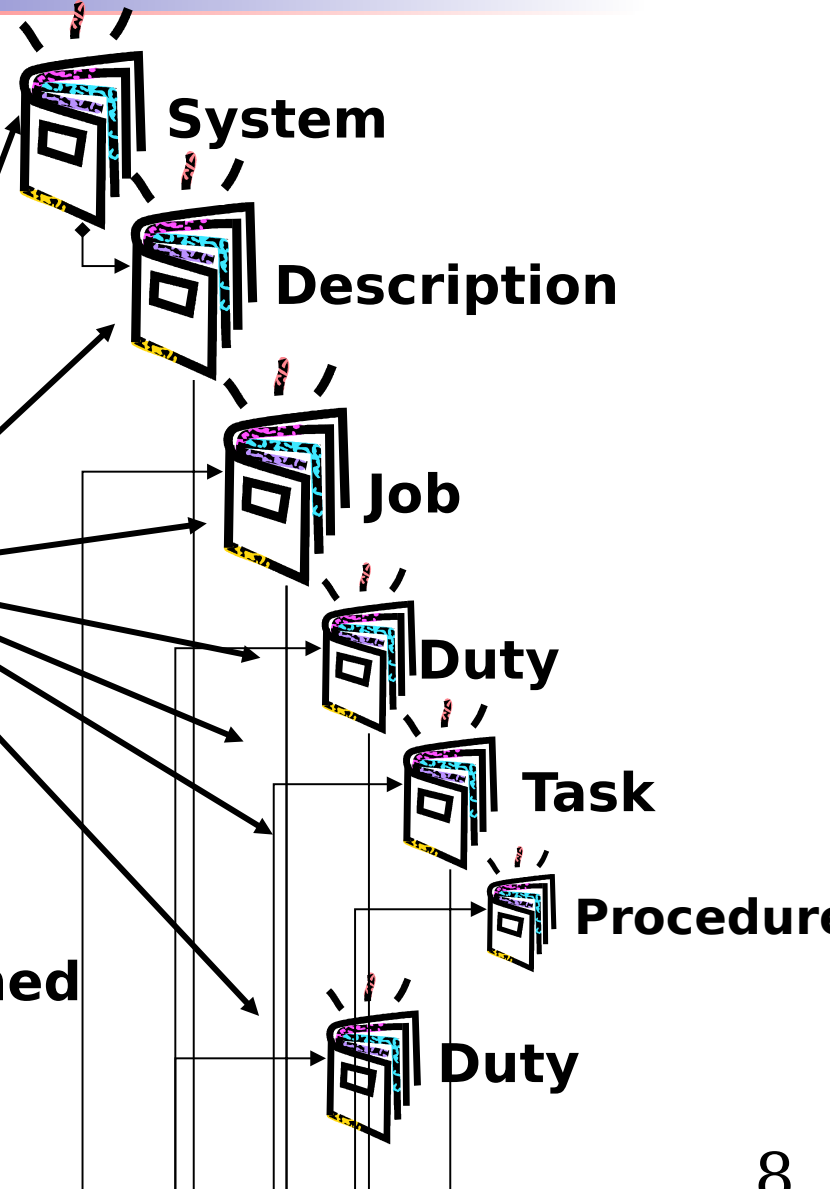
# XML Enables "Reuse"

```
<?xml version="1.0" encoding="UTF-8" ?>
```

```
<SLDD>
<DOCUMENT>
<FRONT>...</FRONT>
<BODY>
<SERVICE>
<SITE>
<TITLE>Text</TITLE>
<DESCINFO>Text</DESCINFO>
<MISSION>Text</MISSION>
<SUBSITE>
<TITLE>Text</TITLE>
<DESCINFO>Text</DESCINFO>
<MISSION>Text</MISSION>
<DIRECTORATE>
<TITLE>Text</TITLE>
<DESCINFO>Text</DESCINFO>
<SUB_DIRECTORATE>
<TITLE>Text</TITLE>
<DESCINFO>Text</DESCINFO>
<JOB_TITLE>
<TITLE>GCCS-M System
Administrator</TITLE>
<DUTY>
<TITLE>Manage
COMPOSE</TITLE>
<DESCINFO>Text</DESCINFO>
<TASK>
<TITLE>Load Operating System
</TITLE>
<Procedure>...</Procedure>
</TASK>
</DUTY>
</JOB_TITLE>
</SUB_DIRECTORATE>
</DIRECTORATE>
</SUBSITE>
</SITE>
</SERVICE>
</BODY>
</DOCUMENT>
</SLDD>
```

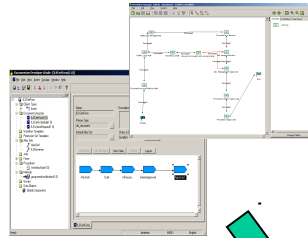
**Chunking**

**Chunk: User Defined  
Reusable Content  
Item**





**GUI Driven  
Workflow and  
Process  
Development Tools**



## Basic Content Control

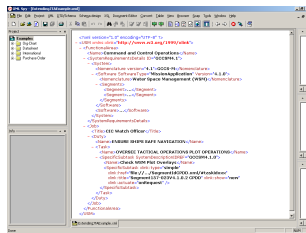
- Versioning
- Access Control
- Full text Indexing and search
- Automated process execution

**Customizable set of  
content properties**



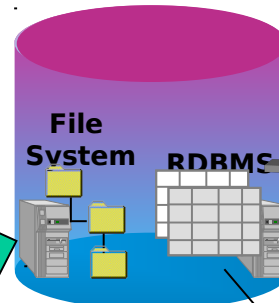
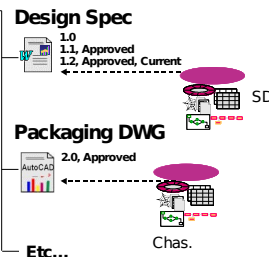
**XML Processing**

- Set Properties
- Create Virtual Documents
- Create multiple content renditions



Root (Parent)

Virtual Documents



**4i  
Web Cache**

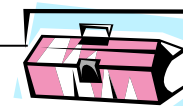
## Site Delivery Services

- Automate delivery of "published" content

## Content Caster

- Byte level "smart push" of content updates

**Documentum  
Foundation  
Classes**



## Fully Customizable Open 'Development Platform

- Java (J2EE)
- Web Development Tool Kit
- eConnectors to Domino, WebLogic, SAP



# "Static" Virtual Documents

## Business Driver

**Virtual Documents**  
XML Documents  
limitless capability  
to customize and  
integrate  
information for user

User  
"sees" 1  
document



"Virtual"  
Document

Linking  
Processor

CPDD A

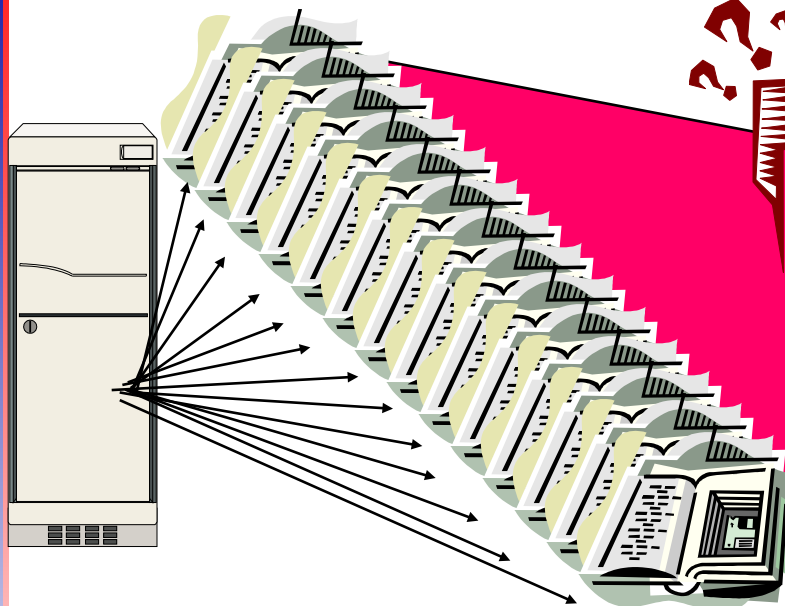
CPDD B  
Procedure

CPDD C  
Procedure

In a "static" virtual document, the linking mechanism is a set of instructions (such as an Xlink document) that tells software how to aggregate a virtual document.

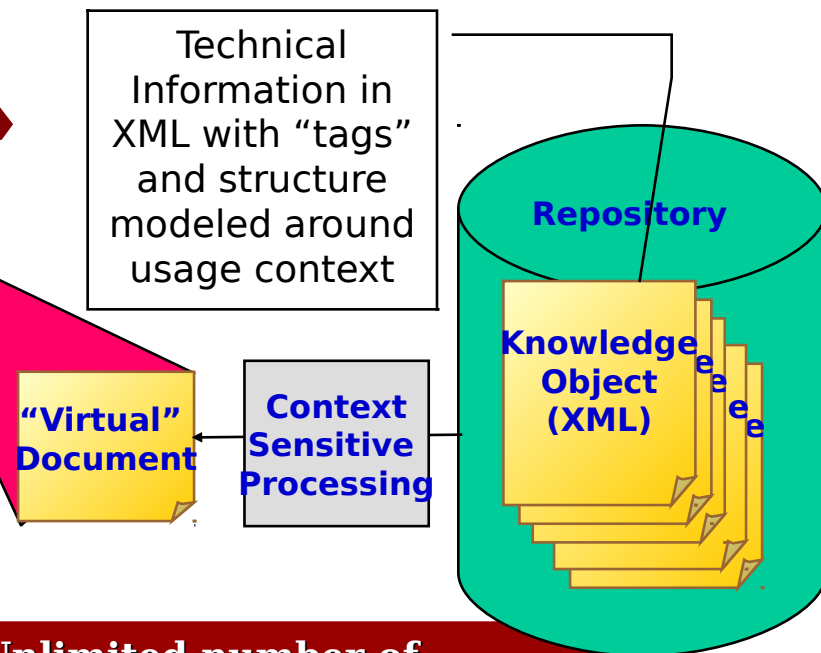
# Why Virtual Documents?

## ATIS "Juke Box"



Thousands of disjoint "documents" that users must read, remember, then locate later for reference. This approach breaks down as more and more documents are added....

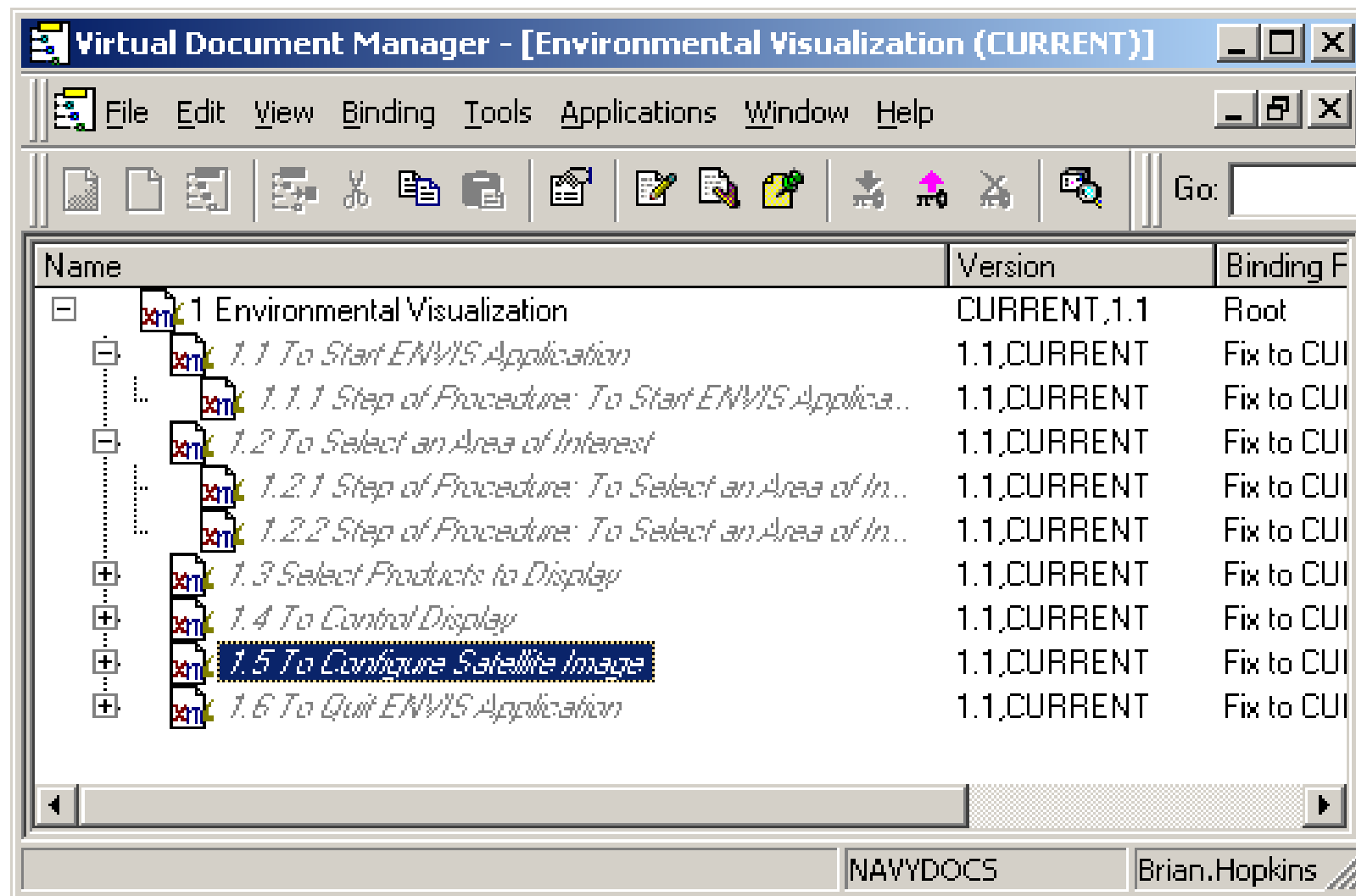
## Virtual Document System

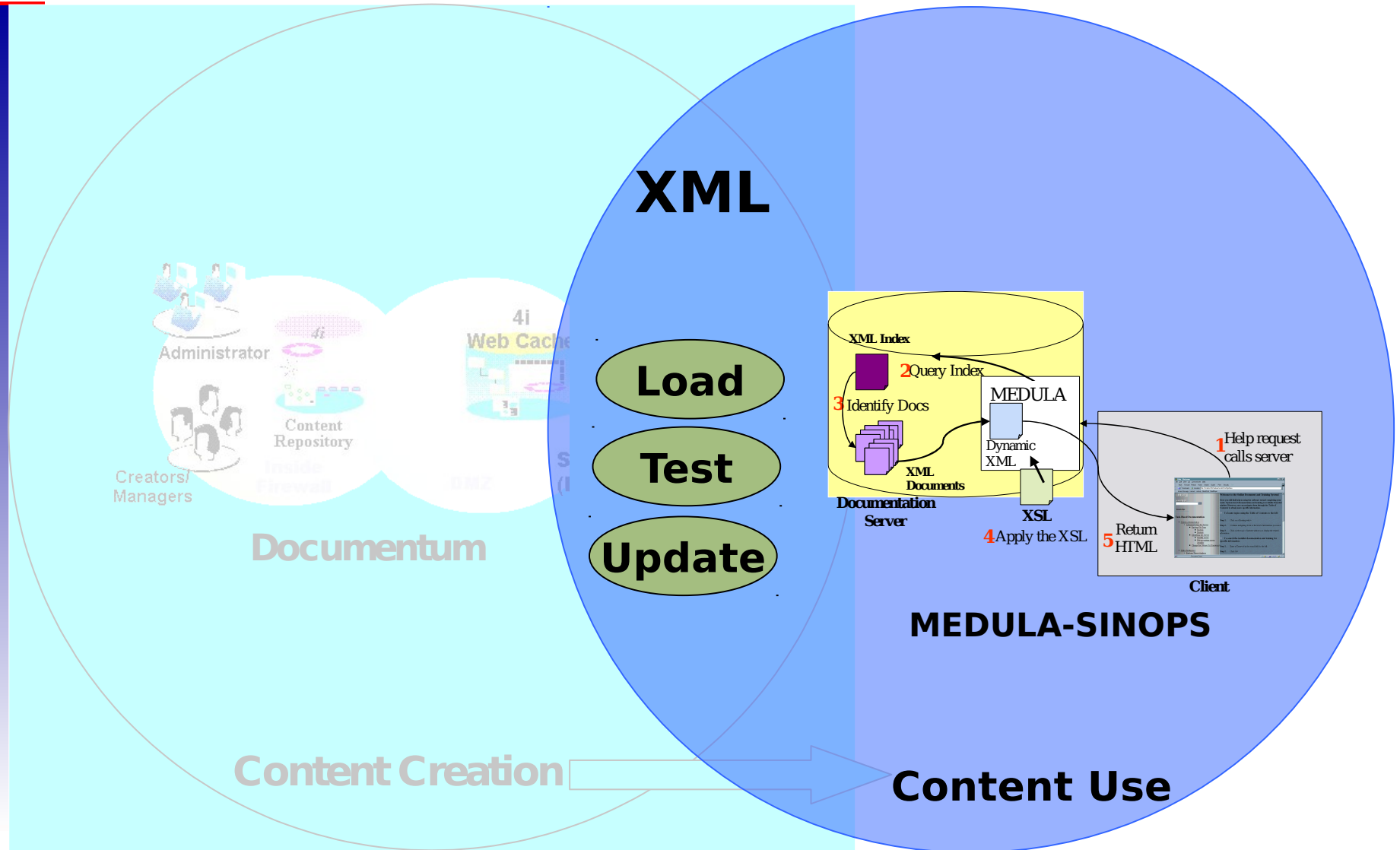


Unlimited number of "knowledge objects" managed by a content repository system are available to software that understands what user needs (by context) and dynamically generates just the right information at just the right time.

because they allow us to provide more information to our

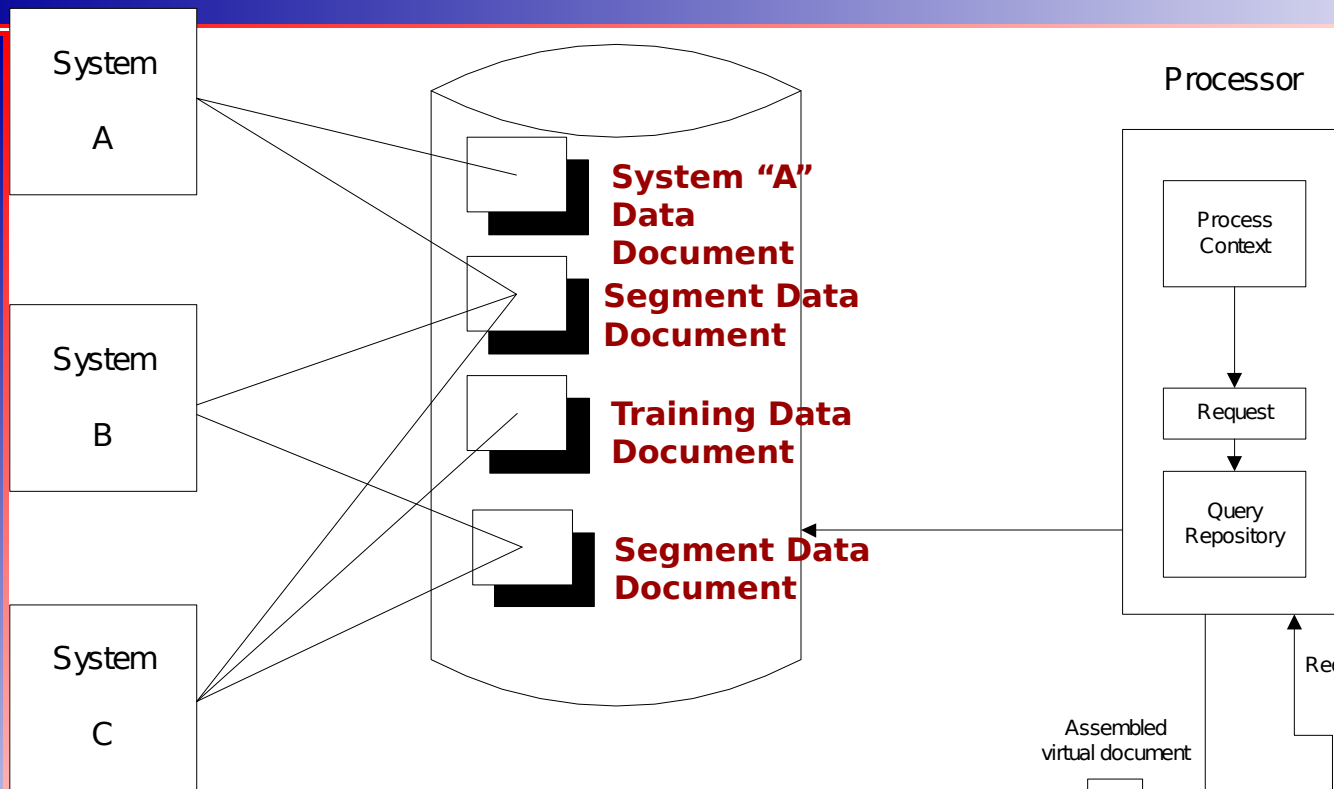
# SPAWAR Documentum's Virtual Document Manager





# Dynamic Virtual Documents

Repository



## Context Drivers

- | User Role in Process
- | System / application
- | Action being performed
- | Security Clearance

## Business Driver

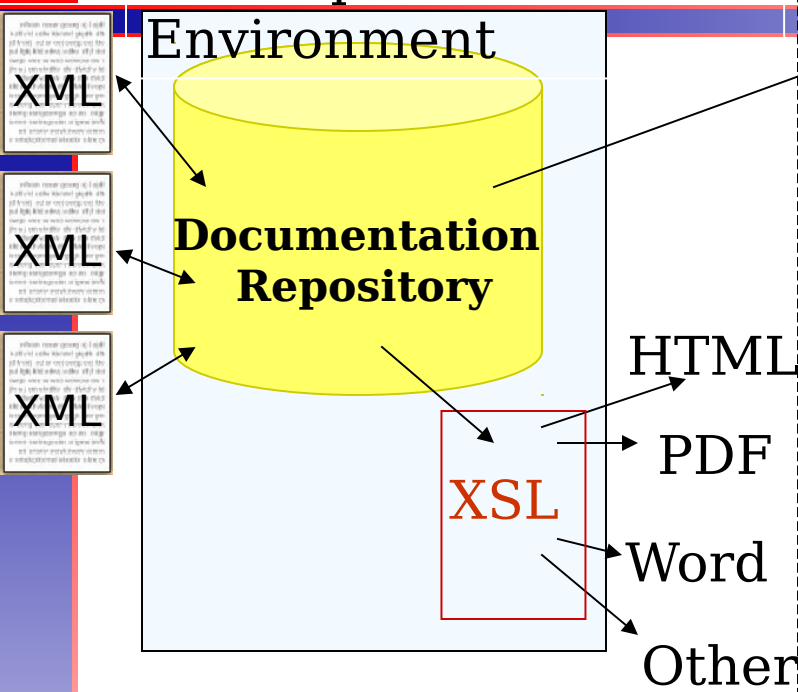
**Dynamic Docs**  
XML facilitates processing of context to deliver the right information at right time

**Dynamic Virtual Documents:  
Generated "on the fly" at run**

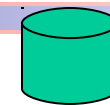
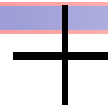


## Segment Packaging

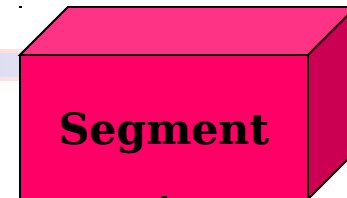
### Development Environment



**Application  
Documentation  
n**



**System  
Software**

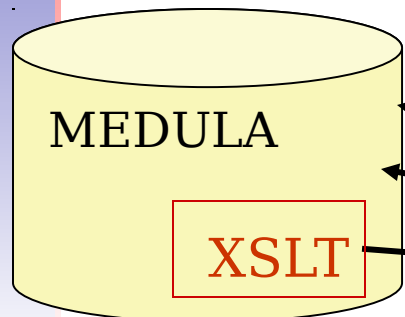


**Segment**

Fielded System (LAN)



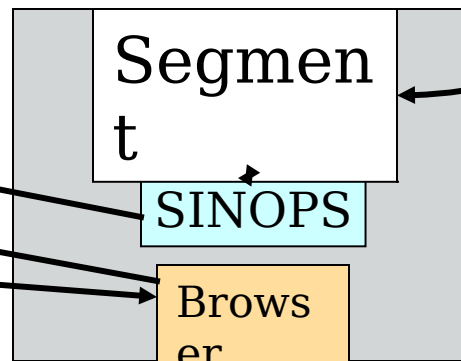
**DII COE  
Installation  
n**



**Documentation  
Server**

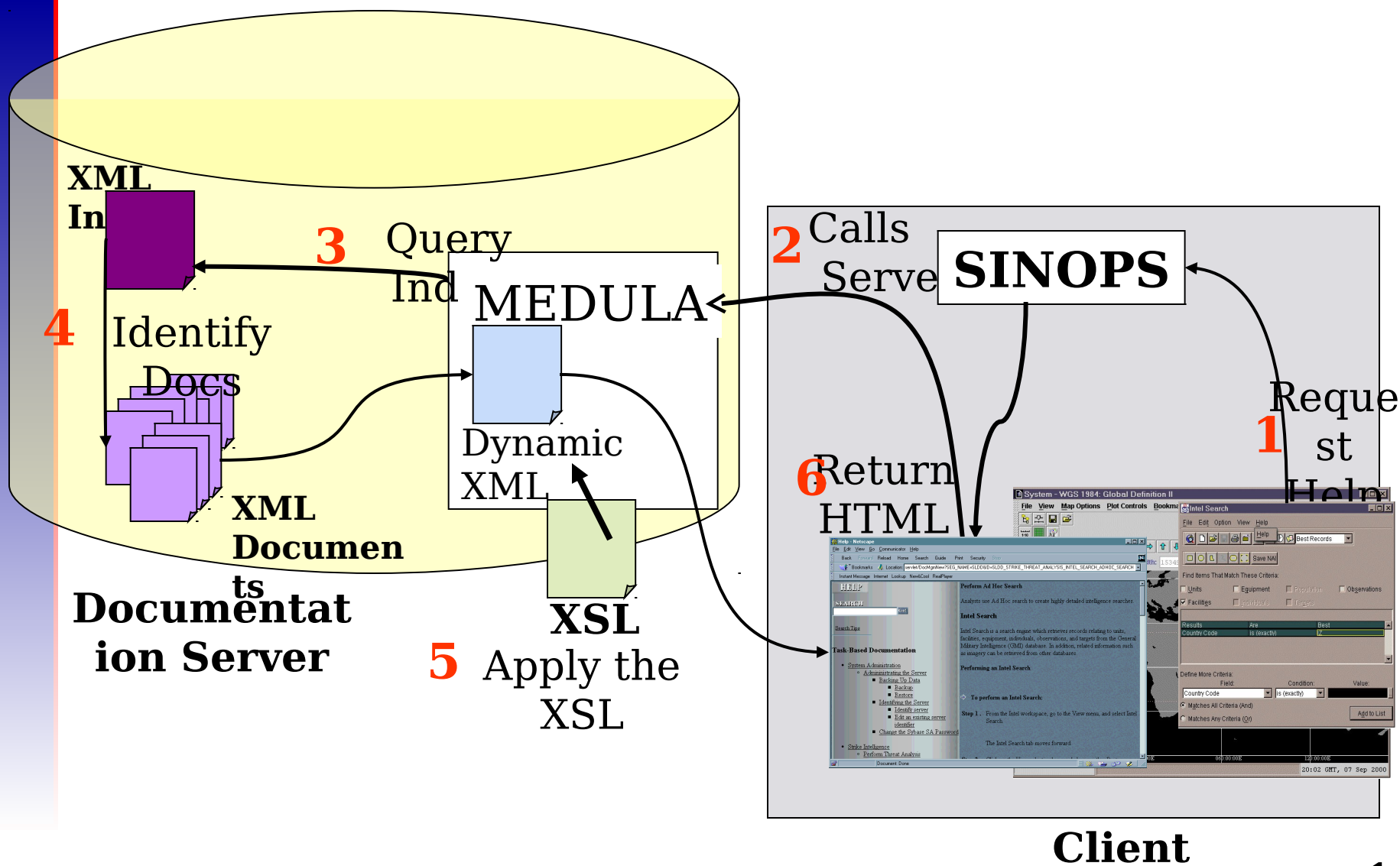
**XSLT**

**HTML**



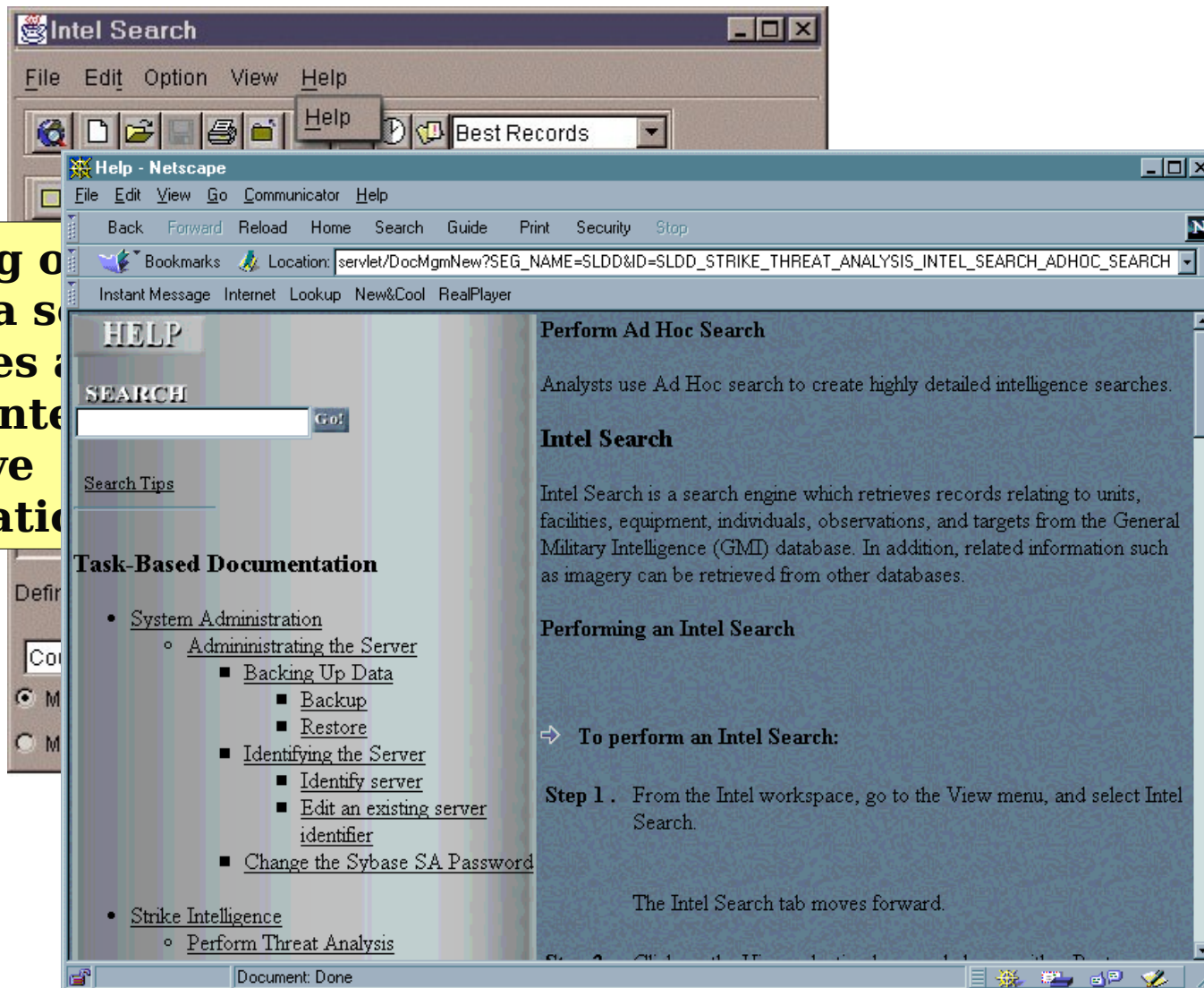
**Brows  
er  
Client**

# Context-Sensitive Flow



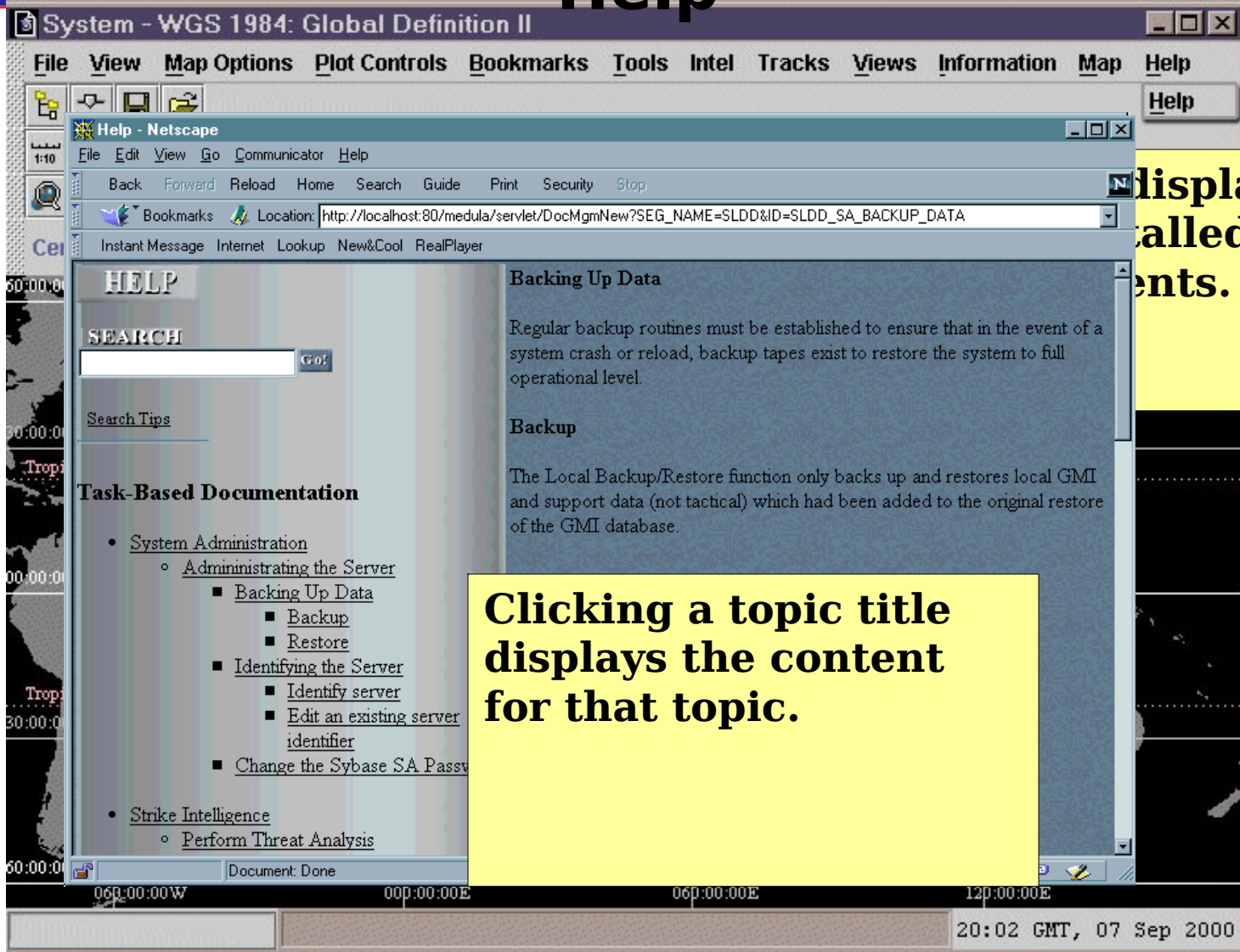


Clicking on the Help icon within a search window launches a Netscape browser with content sensitive information.





# System-Level Documentation and Help



The screenshot shows a Netscape browser window titled "System - WGS 1984: Global Definition II". The address bar displays the URL: `http://localhost:80/modula/servlet/DocMgmNew?SEG_NAME=SLDD&ID=SLDD_SA_BACKUP_DATA`. The main content area is titled "HELP" and contains a "Task-Based Documentation" section with a tree view of topics. The "Backing Up Data" section is expanded, showing sub-topics like "Backup" and "Restore".

**Task-Based Documentation**

- [System Administration](#)
  - [Administering the Server](#)
    - [Backing Up Data](#)
      - [Backup](#)
      - [Restore](#)
    - [Identifying the Server](#)
      - [Identify server](#)
      - [Edit an existing server identifier](#)
    - [Change the Sybase SA Password](#)
- [Strike Intelligence](#)
  - [Perform Threat Analysis](#)

**Backing Up Data**

Regular backup routines must be established to ensure that in the event of a system crash or reload, backup tapes exist to restore the system to full operational level.

**Backup**

The Local Backup/Restore function only backs up and restores local GMI and support data (not tactical) which had been added to the original restore of the GMI database.

displays  
called  
ents.

Clicking a topic title  
displays the content  
for that topic.

# Benefits of USM-DMI

- Aligns documentation process with software development process
- Enable reuse rather than re-authoring of content
  - Through XML
  - Uses a standard CMS Documentum for Life Cycle Management
- Enables context-sensitive help through Dynamic Virtual Documentation
- Ultimately
  - Lowers long-term costs through reuse
  - Improves operators access to improve user knowledge and operational performance.

- ILS Certification will be accomplished by content validation and verification
  - Validation will occur as part of Documentum development workflow.
  - Verification will occur as part of software DT/OT testing
- No Technical Manuals are issued
  - No TDMIS registered
  - No TMINS assignment
- Documentation will be managed with software to which it applies
- Printed Capability
  - SLDD level documents will have page-oriented presentations
    - Using the DISA COE template for documentation vice NAVSEA specification
  - Users can print content from MEDULA or download and print SLDD level document in PDF format.

# Logistics Support

- Users will be able to submit feedback on specific items of content via web page on MEDULA
- Email will be sent to cognizant SPAWAR Software Support Activity or ISEA
- SSA or ISEA will function as TMMA for embedded documentation CM functions.
- TMMA will determine if revision is needed and initiate change process.
- Change process will be managed by Documentum workflow.
- Results
  - Retesting of software and content and delivery of new build
  - Update of content (CPDD or SLLD only)
    - Manually
    - Broadcast automatically ship-to-shore





# Summary

- Requirement for software documentation are different than for traditional technical manuals
- USM-DMI meets those requirements
  - Content Management portion (Documentum)
  - Presentation portion (MEDULA)
- XML provides the key to reuse
- USM-DMI CPPD and SLDD takes place of
  - SAM, SUM, SOM, SUG, SVD...
  - By providing user with context sensitive help, key-word search, online feedback, and printed system-level content.
- USM-DMI content
  - Is better for user, better for developers
  - Will be certified via testing



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- USM-DMI meets those requirements
  - Content Management portion (Documentum)
  - Presentation portion (MEDULA)
- XML provides the common catalysts for reuse
- USM-DMI CPPD and SLDD consolidates standalone
  - SAM, SUM, SOM, SUG, SVD...
  - By providing user with context sensitive help, key-word search, online feedback, and printed system-level content.
- USM-DMI
  - Provides improved content for users and developers
  - Certified via testing